

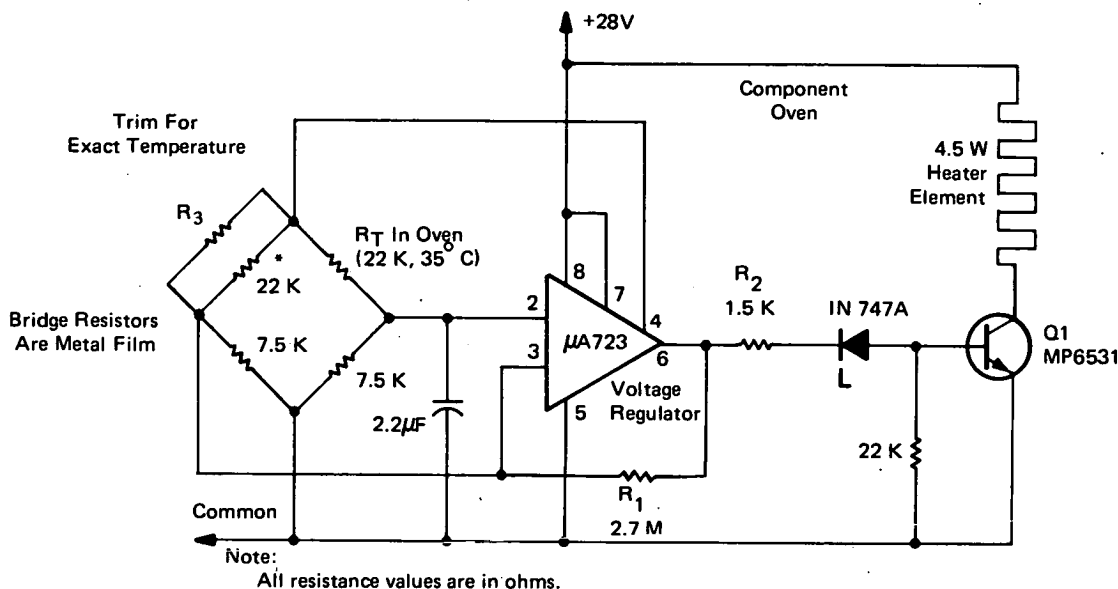
NASA TECH BRIEF

Goddard Space Flight Center



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Oven Temperature Controller for Electronic Components



The problem:

In applications where ambient temperatures vary widely, certain precision electronic components such as crystal oscillators and zener diodes require active temperature control.

The solution:

A simple, inexpensive circuit has been developed which provides this temperature control.

How it's done:

The circuit, shown in the figure, will control the temperature of an oven within $\pm 1^\circ \text{C}$ when the ambient temperature ranges from -50°C up to the oven temperature. In addition, if resistor R_2 is selected to provide adequate drive to transistor Q_1 , the input voltage can vary from 10 to 37 V. Because transistor Q_1 is saturated when it conducts, no heat sink is required.

Resistor R_1 sets the trip-point hysteresis at 2°C with the circuit values shown. If the heater current is less than 150 mA, it can be supplied directly from the $\mu\text{A}723$ integrated circuit by connecting the element between pin 6 and common.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
Goddard Space Flight Center
Code 207.1
Greenbelt, Maryland 20771
Reference: B73-10052

Patent status:

NASA has decided not to apply for a patent.

Source: S. W. Billingsley
Goddard Space Flight Center
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Category 02